Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1(original): A method for joint equalizing and decoding of an incoming data stream in a P-tap parallel decision-feedback decoder (PDFD), the method comprising:

shifting a plurality of survivor metrics into a plurality of first shift registers, wherein for each state of a code utilized by the incoming data stream, a survivor metric for a state is shifted into a first shift register for the state, each first shift register having M cells;

choosing a first survivor metric according to survivor metrics in the first shift registers; and

shifting the first survivor metric into a second shift register having N cells.

Claim 2(original): The method of claim 1, further comprising calculating an inter-symbol interference (ISI) value for each state according to the survivor metrics at the M cells of the first shift register for the state and according to the survivor metrics at the N cells of the second shift register.

Claim 3(original): The method of claim 2, wherein calculating the ISI value for a particular state comprises summing the results of multiplying the survivor metrics at the M cells of the first shift register for the particular state and at the N cells of the second shift register with a respective coefficient.

Claim 4(original): The method of claim 1, wherein choosing the first survivor metric

comprises choosing the first survivor metric according to the survivor metrics at the M^{th} cells of the first shift registers.

Claim 5(original): The method of claim 4, wherein choosing the first survivor metric further comprises selecting a most frequent survivor metric being present at the greatest number of M^{th} cells of the first shift registers as the first survivor metric.

Claim 6(original): The method of claim 4, wherein choosing the first survivor metric further comprises averaging the survivor metrics at the M^{th} cells of the first shift registers and then selecting a survivor metric being closest to the average as the first survivor metric.

Claim 7(original): The method of claim 1, further comprising performing Viterbi decoding of the incoming data stream.

Claim 8(original): The method of claim 1, wherein the code utilized by the incoming data stream is a Trellis code.

Claim 9(original): The method of claim 1, wherein P is equal to M plus N.

Claim 10(original): A P-tap parallel decision-feedback decoder (PDFD) comprising:

a plurality of first shift registers, wherein for each state of a code utilized by an incoming data stream, a survivor metric for a state is shifted into the first shift register for the state, each first shift register having M cells;

a decision device coupled to the first shift registers for outputting a first survivor metric according to survivor metrics in the first shift registers; and

a second shift register having N cells, wherein the first survivor metric is shifted into the second shift register.

Claim 11(original): The PDFD of claim 10, further comprising a plurality of inter-symbol interference (ISI) value calculators for calculating an ISI value for each state according to the survivor metrics at the M cells of the first shift register for the state and according to the survivor metrics at the N cells of the second shift register.

Claim 12(original): The PDFD of claim 11, wherein the ISI value calculator for a particular state comprises:

a plurality of multipliers for multiplying the survivor metrics at the M cells of the first shift register for the particular state and at the N cells of the second shift register with a respective coefficient; and

a summing unit coupled to the outputs of the plurality of multipliers for summing the results of the multiplications and outputting the ISI value.

Claim 13(original): The PDFD of claim 10, wherein the decision device chooses the first survivor metric according to the survivor metrics at the M^{th} cells of the first shift registers.

Claim 14(original): The PDFD of claim 13, wherein the decision device chooses the first survivor metric by selecting a most frequent survivor metric being present at the greatest number of M^{th} cells of the first shift registers as the first survivor metric.

Claim 15(original): The PDFD of claim 13, wherein the decision device chooses the first

survivor metric by averaging the survivor metrics at the M^{th} cells of the first shift registers and then selecting a survivor metric being closest to the average as the first survivor metric.

Claim 16(currently amended): ~~The method of claim 10, wherein t~~The PDFD of claim 10 ~~performs~~ is for Viterbi decoding of the incoming data stream.

Claim 17(original): The PDFD of claim 10, wherein the incoming data stream is a four-dimensional gigabit Ethernet stream utilizing an 8-state Trellis code.

Claim 18(original): The PDFD of claim 10, wherein P is equal to M plus N.

Claim 19(new): A P-tap parallel decision-feedback decoder (PDFD) comprising:

a plurality of X first shift registers, wherein for each state of a code utilized by an incoming data stream, a survivor metric for a state is shifted into the first shift register for the state, each first shift register having M cells;

a first decision device coupled to the first shift registers for outputting a first survivor metric according to survivor metrics in the first shift registers;

a plurality of Y second shift registers, wherein the first survivor metric for a state is shifted into the second shift register for the state, each second shift register having N cells; and

a second decision device coupled to the second shift registers for outputting a second survivor metric according to survivor metrics in the second shift registers,

wherein X is greater than Y.

Claim 20(new): The PDFD of claim 19, wherein the first decision device chooses the first survivor metric by selecting a most frequent survivor metric being present at the greatest number of M^{th} cells of the first shift registers as the first survivor metric.

Claim 21(new): The PDFD of claim 19, wherein the first decision device chooses the first survivor metric by averaging the survivor metrics at the M^{th} cells of the first shift registers and then selecting a survivor metric being closest to the average as the first survivor metric.

Claim 22(new): The PDFD of claim 19, wherein the second decision device chooses the second survivor metric by selecting a most frequent survivor metric being present at the greatest number of N^{th} cells of the second shift registers as the second survivor metric.

Claim 23(new): The PDFD of claim 19, wherein the second decision device chooses the second survivor metric by averaging the survivor metrics at the N^{th} cells of the second shift registers and then selecting a survivor metric being closest to the average as the second survivor metric.